

Amendments to the Claims:

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) A method for testing *Streptococcus pneumoniae* for resistance to penicillin, the method comprising the steps of:
 - a) isolating DNA from *Streptococcus pneumoniae* having unknown resistance to penicillin,
 - b) hybridizing the DNA obtained in step (a) with (i) at least one DNA probe that specifically hybridizes to a DNA sequence specific to a penicillin binding protein (PBP) gene of penicillin sensitive strains of *Streptococcus pneumoniae*, and (ii) at least one DNA probe that specifically hybridizes to a DNA sequence specific to a PBP gene of penicillin resistant strains of *Streptococcus pneumoniae*, and
 - c) determining whether or not said *Streptococcus pneumoniae* is sensitive to penicillin or not by detecting which probe or probes hybridize,

wherein the PBP gene is selected from the group consisting of PBP2x, PBP1a and PBP2b.

2. (Previously Presented) The method according to claim 1, wherein the DNA sequence of at least one DNA probe that specifically hybridizes to a DNA sequence specific for a PBP gene of penicillin sensitive strains of *Streptococcus pneumoniae* consists of a DNA sequence selected from the group consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 9, SEQ ID NO: 10,

SEQ ID NO: 11, SEQ ID NO: 12, SEQ ID NO: 13 and sequences which differ from said sequences by one to four nucleotides.

3. (Previously Presented) The method according to claim 2, wherein the DNA sequence of at least one DNA probe that specifically hybridizes to a DNA sequence specific for a PBP gene of penicillin sensitive strains of *Streptococcus pneumoniae* consists of a DNA sequence selected from the group consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, and SEQ ID NO: 13.

4. (Previously Presented) The method according to claim 1, wherein the at least one DNA probe that specifically hybridizes to a DNA sequence specific for a PBP gene of penicillin resistant strains of *Streptococcus pneumoniae* consists of a DNA sequence selected from the group consisting of SEQ ID NO: 14, SEQ ID NO: 15, SEQ ID NO: 16, SEQ ID NO: 17, SEQ ID NO: 18, SEQ ID NO: 19 and sequences which differ from said sequences by one to four nucleotides.

5. (Previously Presented) The method according to claim 4, wherein the DNA sequence of at least one DNA probe that specifically hybridizes to a DNA sequence specific for a PBP gene of penicillin resistant strains of *Streptococcus pneumoniae* consists of a DNA sequence selected from the group consisting of SEQ ID NO: 14, SEQ ID NO: 15, SEQ ID NO: 16, SEQ ID NO: 17, SEQ ID NO: 18 and SEQ ID NO: 19.

6. (Original) The method according to claim 1, wherein the probes are labeled radioactively.

7. (Cancelled)

8 (Previously Presented) The method according to claim 1, wherein DNA obtained in step (a) is hybridized with more than one DNA probe that specifically

hybridizes to a DNA sequence specific for a PBP gene of penicillin resistant strains of *Streptococcus pneumoniae* and more than one DNA probe that specifically hybridizes to a DNA sequence specific for a PBP gene of penicillin sensitive strains of *Streptococcus pneumoniae*.

9. (Previously Presented) The method according to claim 2, wherein DNA obtained in step (a) is hybridized with more than one DNA probe that specifically hybridizes to a DNA sequence specific for penicillin a PBP gene of sensitive strains of *Streptococcus pneumoniae* chosen from among said group.

10. (Previously Presented) The method according to claim 4, wherein DNA obtained in step (a) is hybridized with more than one DNA probe that specifically hybridizes to a DNA sequence specific for a PBP gene of penicillin resistant strains of *Streptococcus pneumoniae* chosen from among said group.

11. (Previously Presented) A method for testing *Streptococcus pneumoniae* for resistance to penicillin, the method comprising the steps of:

- a) isolating DNA from *Streptococcus pneumoniae* having unknown resistance to penicillin,
- b) exposing the DNA obtained in step (a) with at least one DNA probe that hybridizes to a DNA sequence specific for penicillin sensitive strains of *Streptococcus pneumoniae* and at least one DNA probe that hybridizes to a DNA sequence specific for penicillin resistant strains of *Streptococcus pneumoniae* under conditions that would permit hybridization, and
- c) determining whether or not said *Streptococcus pneumoniae* strain is sensitive to penicillin or not by detecting which probe or probes hybridize;

wherein the at least one DNA probe that hybridizes to a DNA sequence specific for penicillin sensitive strains of *Streptococcus pneumoniae* is selected from the group of sequences consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8,

SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, SEQ ID NO: 13 and sequences that differ from these sequences by one to four nucleotides; and wherein the at least one DNA probe that hybridizes to a DNA sequence specific for penicillin resistant strains of *Streptococcus pneumoniae* is selected from the group of sequences consisting of SEQ ID NO: 14, SEQ ID NO: 15, SEQ ID NO: 16, SEQ ID NO: 17, SEQ ID NO: 18, SEQ ID NO: 19 and sequences that differ from these sequences by one to four nucleotides.

12. (Previously Presented) The method of claim 11, wherein the at least one DNA probe that hybridizes to a DNA sequence specific for penicillin sensitive strains of *Streptococcus pneumoniae* is selected from the group of sequences consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12 and SEQ ID NO: 13; and,

wherein the at least one DNA probe that hybridizes to a DNA sequence specific for penicillin resistant strains of *Streptococcus pneumoniae* is a probe or probes which specifically hybridize to the DNA of antibiotic resistant strains and are selected from the group of sequences consisting of SEQ ID NO: 14, SEQ ID NO: 15, SEQ ID NO: 16, SEQ ID NO: 17, SEQ ID NO: 18 and SEQ ID NO: 19.

13. (Cancelled).

14. (Previously Presented) The method of claim 11, wherein DNA from said *Streptococcus pneumoniae* is exposed to more than one different DNA probe that hybridizes to a DNA sequence specific for penicillin sensitive strains of *Streptococcus pneumoniae* is a DNA sequence consisting of a sequence selected from the group-consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, SEQ ID NO: 13 and

sequences that differ from these sequences by one to four nucleotides, under conditions that can permit hybridization; and,

wherein DNA from said *Streptococcus pneumoniae* is exposed to more than one different resistance-specific DNA probe selected from the group consisting of SEQ ID NO: 14, SEQ ID NO: 15, SEQ ID NO: 16, SEQ ID NO: 17; SEQ ID NO: 18, SEQ ID NO: 19 and sequences that differ from these sequences by one to four nucleotides, under conditions that can permit hybridization.

15. (Withdrawn) A penicillin sensitivity-specific DNA probe for determining penicillin sensitivity in *Streptococcus pneumoniae* selected from the group of sequences consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, SEQ ID NO: 13 and sequences which differ from said sequences by one to four nucleotides, wherein SEQ ID NOS.: 1-13 are, respectively:

AGT CAG CAA CGG GTA AG,

AAC GAA CGA TGG ACG GT,

CAT TTC CAG NCC CCT CCA,

TGC AGA TGC CAC GAT TC,

CTG GTC AGC TTC CTG CG,

TGG TTA TCT AGT CGG GTT AA,

CTG TAT CGA TGA GTC CG,

AAC AGT TCT GCT GAA GAA G,

TAG GAG CAC GCC ATC AGT,

GAC GAA ATG CCT ATC TTG,

CTC TCA ATT TGT AGC ACC T,
CTA TTC TAA CCG TCT GAC A, and
ATC AAA TAC CTA TAT GGT CC;
wherein N is any nucleotide.

16. (Withdrawn) A penicillin resistance-specific DNA probe for determining penicillin resistance in *Streptococcus pneumoniae* selected from the group of sequences consisting of SEQ ID NO: 14, SEQ ID NO: 15, SEQ ID NO: 16, SEQ ID NO: 17, SEQ ID NO: 18, SEQ ID NO: 19 and sequences which differ from said sequences by one to four nucleotides, wherein SEQ ID NOS.: 14-19 are, respectively:

TGG AGA ATA NTT CAA TAG N,
GTC TAC TTG AAC AAA AAA TG,
TTA GTT GGG ACG GAC CCT,
GTA ACN NTT CAA CAG CCT,
CTC CGA NCA ATA CGT CTC T, and
GCT CCA GAT NAA ATG TTT GT;

wherein N is any nucleotide.

17. (Withdrawn) A kit for performing the method of claim 1, comprising penicillin sensitivity-specific DNA probes for determining penicillin sensitivity in *Streptococcus pneumoniae* selected from the group of sequences consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, SEQ ID NO: 13 and sequences which differ

from said sequences by one to four nucleotides, wherein SEQ ID NOS.: 1-13 are, respectively:

AGT CAG CAA CGG GTA AG,
AAC GAA CGA TGG ACG GT,
CAT TTC CAG NCC CCT CCA,
TGC AGA TGC CAC GAT TC,
CTG GTC AGC TTC CTG CG,
TGG TTA TCT AGT CGG GTT AA,
CTG TAT CGA TGA GTC CG,
AAC AGT TCT GCT GAA GAA G,
TAG GAG CAC GCC ATC AGT,
GAC GAA ATG CCT ATC TTG,
CTC TCA ATT TGT AGC ACC T,
CTA TTC TAA CCG TCT GAC A, and
ATC AAA TAC CTA TAT GGT CC;

wherein N is any nucleotide;

and further comprising penicillin resistance-specific DNA probes for determining penicillin resistance in *Streptococcus pneumoniae* selected from the group of sequences consisting of SEQ ID NO: 14, SEQ ID NO: 15, SEQ ID NO: 16, SEQ ID NO: 17, SEQ ID NO: 18, SEQ ID NO: 19 and sequences which differ from said sequences by one to four nucleotides, wherein SEQ ID NOS.: 14-19 are, respectively:

TGG AGA ATA NTT CAA TAG N,
GTC TAC TTG AAC AAA AAA TG,
TTA GTT GGG ACG GAC CCT,
GTA ACN NTT CAA CAG CCT,
CTC CGA NCA ATA CGT CTC T, and
GCT CCA GAT NAA ATG TTT GT;

wherein N is any nucleotide.

18. (Cancelled)

19. (Previously Presented) The method according to claim 11, wherein the DNA sequence of at least one DNA probe that hybridizes to a DNA sequence specific for penicillin sensitive strains of *Streptococcus pneumoniae* consists of a DNA sequence selected from the group consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, and SEQ ID NO: 13.

20. (Previously Presented) The method according to claim 11, wherein the DNA sequence of at least one DNA probe that hybridizes to a DNA sequence specific for penicillin resistant strains of *Streptococcus pneumoniae* consists of a DNA sequence selected from the group consisting of SEQ ID NO: 14, SEQ ID NO: 15, SEQ ID NO: 16, SEQ ID NO: 17, SEQ ID NO: 18 and SEQ ID NO: 19.

21. (Previously Presented) The method according to claim 11, wherein the probes are labeled radioactively.

22. (New) The method according to claim 8, wherein the DNA sequence of the DNA probes that specifically hybridizes to DNA sequences specific for a

PBP gene of penicillin sensitive strains of *Streptococcus pneumonia* consists of a DNA sequence selected from the group consisting of

SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO:3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, SEQ ID NO: 13 and sequences which differ from said sequences by one to four nucleotides.

23. (New) The method according to claim 8, wherein the DNA sequence of the DNA probes that specifically hybridizes to DNA sequences specific for a PBP gene of penicillin resistant strains of *Streptococcus pneumonia* consists of a DNA sequence selected from the group consisting of SEQ ID NO: 14, SEQ ID NO: 15, SEQ ID NO: 16, SEQ ID NO: 17, SEQ ID NO: 18, SEQ ID NO: 19 and sequences which differ from said sequences by one to four nucleotides.